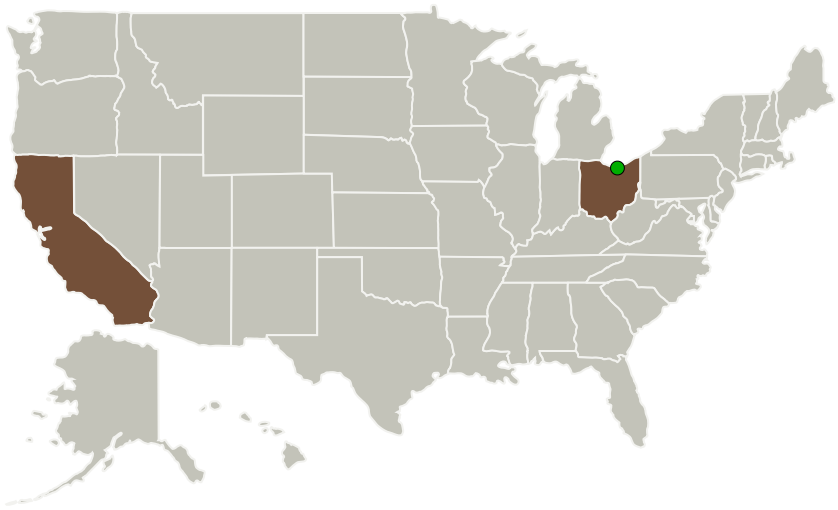
Long Out-time, Out-of-Autoclave Cure Composites, Phase II

Completed Technology Project (2011 - 2013)

Project Introduction

As the size of composite parts exceed that of even the largest autoclaves, new out-of-autoclave processes and materials are necessary to achieve the same level of performance as autoclave cured composites. Many of the new out-of-autoclave prepreg systems can be used to manufacture high quality composites initially but the lay-up time for producing quality parts is limited by the short shelf-life at ambient conditions. The resin advancement, due to long lay-up times, commonly causes variations in fiber volume and higher void content in the cured structures. Also, current out-of-autoclave prepreg systems do not provide the same level of performance, especially damage tolerance, as many current autoclave cured prepreg systems. It is the objective of this work to develop a matrix and prepreg system for out-of-autoclave processing that possesses a year plus shelf-life while also providing an excellent balance of composite properties and damage tolerance. As an additional functionality, the out-of-autoclave prepreg system will be developed to have inherent skin-core self adhesive characteristics so that film adhesives may not be required for designs with honeycomb structures. It is expected that the TRL will be 6 at the end of this Phase 2 program.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
Applied Poleramic, Inc.	Lead Organization	Industry	Benicia, California
Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio

Primary U.S. Work Locations	
California	Ohio

Project Transitions

June 2011: Project Start

May 2013: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/139041)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Applied Poleramic, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

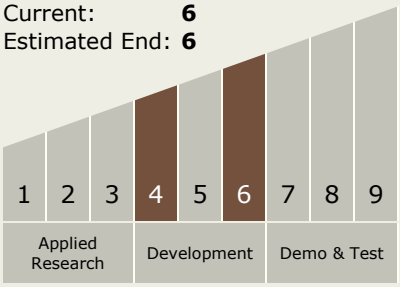
Carlos Torrez

Principal Investigator:

Brian S Hayes

Technology Maturity (TRL)

Start: **4**
Current: **6**
Estimated End: **6**



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Technology Areas

Primary:

- TX12 Materials, Structures, Mechanical Systems, and Manufacturing
  - TX12.4 Manufacturing
    - TX12.4.1 Manufacturing Processes

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System